IN THE SPECIFICATION

Please amend paragraph 1 as follows:

This patent application claims priority from U.S. Provisional Patent Application serial number 60/453,316 filed on March 10, 2003 and from U.S. Provisional Patent Application serial number 60/464,917 filed on April 23, 2003. This patent application is a continuation in part of U.S. Patent 6,609,568 issued on August 26, 2003 ~~Application no. 09/910,209~~, entitled Closed-Loop Draw down Apparatus and Method for In-Situ Analysis of Formation Fluids, by V. Krueger et al. filed on July 20, 2001, published on August 22, 2002 which is incorporated herein by reference in its entirety, ~~hereinafter referred to as "the Krueger application"~~, which along with the current application is commonly owned by Baker Hughes, Incorporated ~~Inc.~~

Please amend paragraph 10 as follows:

[0010] ~~The parent application for the present invention,~~ U.S. Patent number 6,609,568 teaches ~~the Krueger application provides~~ a formation rate analysis (FRA) apparatus and method that addresses some of the drawbacks described above by utilizing a closed-loop apparatus and method to perform formation pressure and permeability tests more quickly than the devices and methods described above. With quicker formation testing, more tests providing actual pressures and permeability may be provided to enhance well operation efficiency and safety. U.S. Patent number 6,609,568 ~~The Krueger application~~ provides an apparatus and method capable of creating a test volume within a borehole, and incrementally decreasing the pressure within the test volume at a variable rate to allow periodic measurements of pressure as the test volume pressure decreases. Adjustments to the rate of decrease are made before the pressure stabilizes thereby eliminating the need for multiple

cycles. This incremental draw down apparatus and method will significantly reduce overall measurement time, thereby increasing drilling efficiency and safety.

Please amend paragraph 14 as follows:

[0014] The novel features of this invention, as well as the invention itself, will be best understood from the attached drawings, taken along with the following description, in which similar reference characters refer to similar parts, and in which:

Fig. 1 is a graphical qualitative representation a formation pressure test using a particular prior art method;

Fig. 2 is an elevation view of an offshore drilling system according to one embodiment of the present invention;

Fig. 3 shows a portion of drill string incorporating the present invention;

Fig. 4 is a system schematic of the present invention;

Fig. 5 is an elevation view of a wireline embodiment according to the present invention;

Fig. 6 is a plot graph of pressure vs. time and pump volume showing predicted drawdown behavior using specific parameters for calculation;

Fig. 7 is a plot graph of pressure vs. time showing the early portion of a pressure buildup curve for a moderately low permeability formation;

Fig. 8 is a plot graph of a method using iterative guesses for determining formation pressure;

Fig. 9 is a plot graph of a method for finding formation pressure using incomplete pressure buildup data;

Fig. 10 is a plot graph of pressure vs. draw rate illustrating a computation technique used in a method according to the present invention to determine formation pressure;

Fig. 11 is a graphical representation illustrating a method according to the present invention;

Fig. 12 is an illustration of a wire line formation sampling tool deployed in a well bore;

Fig. 13 is an illustration of a bi-directional formation fluid pump for pumping formation fluid into the well bore during pumping to free the sample of filtrate and pumping formation fluid into a sample tank after sample clean up;

Fig. 14 of formation rate analysis data values for three strokes of the formation fluid pump;

Fig. 15 is a plot of formation fluid pump pressure, packer pressure, linear volume displacement of the pumping piston and pumping volume for three strokes of the sampling pump in a first example of problem free pumping of formation fluid;

Fig. 16 is a plot of pump pressure versus formation flow rate for the three strokes illustrated in Fig. 14 and Fig. 15. Note that the correlation coefficient (R^2)in Fig. 16 and Fig. 14 are above .99 indicating that the pumping speed is well matched to the formation flow rate;

Fig. 17 is a second example of pumping history showing a plot of formation fluid pump pressure, packer pressure, linear volume displacement of the pumping piston and pumping volume for three strokes of the sampling pump in a second example of pumping of formation fluid where a problem is apparent;

Fig. 18 is a plot for pressure versus formation rate for all pump strokes of the example of **Fig. 17** showing a correlation coefficient (R^2) of only 0.052, indicative of a problem; ~~and~~

Fig. 19 is a plot for pressure versus formation rate for the first two pump strokes of the example of **Fig. 17** showing a correlation coefficient (R^2) of 0.9323, indicative of a quality sample up to that point; and

Fig. 20 is an illustration of a sampling tool where by a quality sample is pumped from a formation while measuring mobility/permeability versus time to ensure a single phase sample with low filtrate contamination, the sample having the same physical characteristics as it did when the sample existed in a formation.

Please amend paragraph 18 as follows:

[0018] In one embodiment of the present invention an extendable pad-sealing element **302** for engaging the well wall **4** (**Fig. 1**) is disposed between the packers **304** and **306** on the test apparatus **216**. The pad-sealing element **302** could be used without the packers **304** and **306**, because a sufficient seal with the well wall can be maintained with the pad **302** alone. If packers **304** and **306** are not used, a counterforce is ~~required~~ provided so pad **302** can maintain sealing engagement with the wall of the borehole **204**. The seal creates a test volume at the pad seal and extending only within the tool to the pump rather than also using the volume between packer elements.

Please amend paragraph 33 as follows:

[0033] Pressure in the probe can be related to time by calculating the system volume as a function of time from Eq. 2. Conversely, if compressibility is not constant, its average value between any two system volumes is:

$$C_{avg.} = \frac{\ln\left[\frac{V_{sys_{n-1}}}{V_{sys_n}}\right]}{P_2 - P_1} \qquad (6)$$

where subscripts 1 and 2 are not restricted to being consecutive pairs of readings. Note that if temperature decreases during the drawdown, the apparent compressibility will be too low. A sudden increase in compressibility may indicate a pumping problem such as sanding, the evolution of gas or a leak past the packer on the seal between the probe face and the bore hole wall. The calculation of compressibility, under any circumstances, is invalid whenever pressure in the probe is less than formation pressure when fluid can flow into the probe giving the appearance of a marked increase in compressibility. Note, however, that compressibility of real fluids almost invariably increases slightly with decreasing pressure.

Please amend paragraph 69 as follows:

[0069] As illustrated in the partial sectional and schematic view of **FIG. 13**, the formation testing instrument **13** of **FIG. 12** is shown to incorporate therein a bi-directional piston pump mechanism shown generally at **24** which is illustrated schematically in **Fig. 13.** Within the instrument body **13** is also provided at least one and preferably a pair of sample tanks which are shown generally at **26** and **28** and which may be of identical construction if

desired. The piston pump mechanism **24** defines a pair of opposed pumping chambers **62** and **64** which are disposed in fluid communication with the respective sample tanks via supply conduits **34** and **36**. Discharge from the respective pump chambers to the supply conduit of a selected sample tank **26** or **28** is controlled by electrically energized three-way valves **27** and **29** or by any other suitable control valve arrangement enabling selective filling of the sample tanks. The respective pumping chambers are also shown to have the capability of fluid communication with the subsurface formation of interest via pump chamber supply passages **38** and **40** which are defined by the sample probe **18** of **FIG. 12** and which are controlled by appropriate valving. The supply passages **38** and **40** may be provided with check valves **39** and **41** to permit overpressure of the fluid being pumped from the chambers **62** and **64** if desired. <u>Position Sensor Resistor</u> LMP **47** tracks the position and speed of pistons **58** and **60** from which pumping volume, over time, for a known piston cylinder size can be determined.

Please amend paragraph 91 as follows:

[0091] As shown in **Fig. 14**, mobility and compressibility changes for each pump stroke, but are very close. Mobility increases only slightly. The FRA for three pumping strokes as combined generates a de facto average of sorts over three pumping strokes for compressibility and mobility. Turning now to **Fig. 16**, the FRA plot **1604** for the three pumping strokes combined, as shown in **Fig. 16** illustrates a relatively good correlation to a straight line **1602** of 0.9921. The above example indicates the FRA can be successfully applied to pumping data when the Reservation Characterization Instrument <u>™</u> (RCI) 56 cc (BB) pump is used and pumping volume (PTV) curves are turned on. FRA is applied to each stroke or can be applied to several strokes together in order to save computation time.

Please amend paragraph 94 as follows:

[0094] The present invention selects a portion of total draw down pump strokes and builds FRA data based on the calculated draw down rate. With the pumping data, an analysis interval is selected based on the number of pump strokes instead of draw down rate. The present invention uses a variable number of strokes through out the pumping, choosing a small pump strokes at the beginning, e.g., two or three pump strokes, and progressively increasing the number of pump strokes up to a selectable fixed maximum strokes, e.g., 10 strokes, or in the present example, approximately 500 cc of pumped fluid.

Please amend paragraph 96 as follows:

[0096] As shown in **Fig. 20**, pump **2018** pumps formation fluid from formation **2010**. The formation fluid from the formation **2010** is directed either to the borehole exit **2012** during sample cleanup or to single phase sample tank **2020** and captured as sample **2021** once it is determined that the formation sample is cleaned up. The present invention enables monitoring of compressibility, permeability and mobility versus time in real time to enable quality control of the sample so that the sample remains in the same state as it existed in the formation. <u>Borehole fluid **2016** surrounds the tool **2001**. Packer **2024** contacts formation **2010**. Formation fluid enters the tool **2001** on suction side **2014** of pump **2018** and exits pressure side **2016**. Valve A **2022** allows fluid to enter single phase tank **2020** sample vessel or chamber **2021**. Valve B **2026** allows fluid to exit **2012** to the borehole. The bottom chamber **2028** of single phase tank **2020** is open to the borehole pressure.</u>